

TALC AND PYROPHYLLITE

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In 2004, production of talc increased to 857,000 metric tons (t) valued at \$23.3 million from 840,000 t valued at \$22.7 million in 2003 (table 1). Domestic sales decreased to 838,000 t valued at \$74 million from 845,000 t valued at \$75.2 million in 2003. Exports increased to 202,000 t in 2004 from 192,000 t in 2003. Imports decreased to an estimated 226,000 t in 2004 from 237,000 t in 2003. U.S. apparent consumption decreased to 881,000 t in 2004 from 885,000 t in 2003. World production of talc and pyrophyllite was 8.32 million metric tons (Mt). Production and sales of pyrophyllite increased in 2004 relative to 2003; data are concealed to avoid disclosing company proprietary data.

The mineral talc is a hydrous magnesium silicate. A massive talcose rock is called steatite, and an impure massive variety is known as soapstone. Talc is used commercially because of its fragrance retention, luster, purity, softness, and whiteness. Other commercially important properties of talc are its chemical inertness, high-dielectric strength, high-thermal conductivity, low electrical conductivity, and oil and grease adsorption. The major markets for talc are ceramics, paint, paper, and plastics.

Pyrophyllite is a hydrous aluminum silicate with a structure similar to talc. Such properties as chemical inertness, high dielectric strength, high melting point, and low electrical conductivity make it useful for ceramic and refractory applications.

Legislation and Government Programs

In 2004, the U.S. Department of Defense authorized the disposal of 900 t of block and lump talc and 988 t of ground talc, which was the entire uncommitted inventory, from the National Defense Stockpile.

The U.S. Department of Health and Human Services issued a call for public comments on the possible inclusion of cosmetic and occupational talc in the 12th edition of the, "Report on Carcinogens." The National Toxicology Program panel was considering talc for study because some epidemiological studies suggested that there was an increased risk of ovarian cancer with certain cosmetic talc uses and an increased risk of cancer among workers exposed to talc under an occupational setting (U.S. Department of Health and Human Services, 2004).

A study by the U.S. Geological Survey (USGS) determined that geologic setting is a good indicator as to whether or not amphibole asbestos may be present in a talc deposit. Talc deposits, formed when siliceous hydrothermal fluids altered dolostone, generally did not contain amphiboles or their content was negligible. Talc deposits formed by contact or regional metamorphism consistently contained amphiboles, many of which could be asbestiform. This relation between mode of formation and amphibole content is useful as a screening tool when evaluating talc deposits for their potential to contain asbestos minerals (Van Gosen and others, 2004).

Production

Talc.—Domestic production data were obtained through a voluntary survey of U.S. mining companies conducted by the USGS. Survey forms were sent to 10 companies that mined talc. Responses were received from eight companies. Data for nonrespondents were estimated from reported prior-year data adjusted according to employment and consuming industry trends as well as data obtained from associated milling operations. Responses accounted for approximately 60% of the production data presented in table 1.

In 2004, 8 companies operating 10 mines in 6 States mined soapstone, steatite, and talc. All were open pit mining operations. The producers, in decreasing order of production, were Luzenac America Inc., Wold Talc Co., Barrett's Minerals Inc. (a subsidiary of Minerals Technologies Inc.), Gouverneur Talc Co., Milwhite Inc., Suzorite Mineral Products Inc. (a subsidiary of Zemex Corp.), CalTalc Co., and Steatite of Southern Oregon. New World Stone Co., Nelson County, VA, and Standard Industrials Minerals Inc., Inyo County, CA, did not mine in 2004 but worked from stockpiles. The four leading domestic producers collectively accounted for more than 75% of the U.S. tonnage mined.

In 2004, U.S. mine production increased to 857,000 t valued at \$23.3 million compared with 840,000 t valued at \$22.7 million in 2003 (tables 1, 2). Production increased in California, Montana, New York, and Texas. Montana led all States in the tonnage and value of talc produced, followed by Texas, Vermont, New York, California, and Oregon. Mines operating in Montana, New York, Texas, and Vermont accounted for nearly all domestic talc production.

Luzenac America consolidated production of its personal care talc products at its Houston, TX, milling operation following closure of its West Windsor, VT, mill. Investments made by Luzenac will enable the Houston plant to mill talc for cosmetic and pharmaceutical applications (Industrial Minerals, 2004b).

Pyrophyllite.—Domestic production data were acquired through a voluntary USGS survey of the three U.S. companies that mined pyrophyllite. Two companies responded to the survey; the remaining data were estimated from reported prior-year data adjusted according to employment and consuming industry trends. Data are concealed to avoid disclosing company proprietary data.

Piedmont Minerals Co. Inc. and Standard Mineral Co. Inc. operated three mines in North Carolina. Standard Industrial Minerals Inc. operated one mine in California. Production of pyrophyllite increased slightly from that of 2003.

Consumption

Domestic consumption data for talc and pyrophyllite were developed by the USGS from a voluntary survey of U.S. mills. Survey forms were sent to 11 companies operating 13 mills in 6 States for talc and 3 companies operating 3 mills in 2 States for pyrophyllite. Ten respondents accounted for 70% of the talc data presented in table 3. The remaining data were estimated from reported prior-year data adjusted according to employment and consuming industry trends. One pyrophyllite producer responded.

Talc.—Producers reported that 838,000 t of talc valued at \$74 million was sold, used, or exported in 2004, a decrease from 845,000 t valued at \$75.2 million in 2003 (table 1). Domestic sales by U.S. producers decreased to 688,000 t in 2004 from 718,000 t in 2003. Talc was sold domestically for ceramics (sanitaryware and tiles), paint, other (unspecified) applications, paper, roofing, plastics, rubber, and cosmetics, in decreasing order of consumption (table 3). Loss of sales for cosmetics applications accounted for a significant portion of the overall decline in domestic sales in 2004 with smaller losses in paint and plastic markets.

Sales of talc to manufacturers of paint, roofing, and tile generally are tied to the housing industry. Construction starts for new privately owned housing increased to 1.96 million units in 2004 from 1.85 million units in 2003 (U.S. Census Bureau, 2005¹). Shipments of architectural paint (the major paint market for talc) increased to 3.13 billion liters (826 million gallons) from 2.93 billion liters (773 million gallons) in 2003 (U.S. Census Bureau, 2005). Ceramic tile is a major market for talc, and U.S. producers must sell their talc into a market that competes with imported ceramic tile. The U.S. International Trade Commission reported that imports of ceramic tile under Harmonized Tariff Schedule codes 6907.10.00, 6908.10.10, 6908.10.20, and 6908.10.50 increased to 29.2 million square meters valued at \$198 million in 2004 from 26.8 million square meters valued at \$180 million in 2003 (U.S. International Trade Commission, 2005§).

Most of the 226,000 t of imported talc listed in table 6 was not included in the domestic end-use data listed in table 3. An estimated end-use breakdown of sales of imports in 2004 based on data on countries of origin, ports of entry, regional end-use patterns, and current domestic markets is plastics, 90,000 t; cosmetics, 42,000 t; paint, 36,000 t; unknown, 27,000 t; ceramics and refractory products, 17,000 t; paper, 10,000 t; and rubber, 4,000 t.

Pyrophyllite.—In 2004, domestic consumption of pyrophyllite increased slightly from that of 2003; data are concealed to avoid disclosing company proprietary data. Pyrophyllite was used in refractory products, ceramics, paint, unspecified applications, insecticides, and rubber in decreasing order of consumption. Markets remained relatively unchanged in 2004. Ceramic and refractory uses accounted for more than 70% of domestic pyrophyllite sales.

Prices

The unit value of crude talc was estimated to be \$27 per metric ton. Most of the talc sold in the United States was sold only after crushing and grinding. Following sorting to remove waste, primary crushing, and screening, the unit value of the unmilled talc probably would be in the range of \$50 to \$60 per ton at the mill. The average reported unit value of processed talc was \$88 per ton, a slight decrease from \$89 per ton in 2003. The average unit values of crude and processed pyrophyllite were essentially unchanged from those of 2003.

The average free alongside ship unit value for exports of unmilled talc was \$207 per ton, a decrease from \$310 per ton in 2003. The large unit values in 2003 and 2004 probably reflect the inclusion of some small shipments of finished products, such as body powders or sculpting-grade talc, whose values exceeded \$1,000 per ton, as well as milled talc products under this export code. The unit value for milled talc exports was \$196 per ton in 2004, a decrease from \$206 per ton in 2003. The unit value of all exports was \$196 per ton in 2004 compared with \$204 per ton in 2003.

The average customs unit value for imports was \$128 per ton for unground talc, a decline from \$134 per ton in 2003. The average customs value for ground talc was estimated to be \$294 per ton compared with \$198 per ton in 2003. The differences in unit values between 2003 and 2004 reflects the inclusion of several low-tonnage, high-value shipments that exceeded \$2,000 per ton (probably representing packaged talc products) and the slightly greater values at most ground talc imports. The average customs value was \$874 per ton for cut or sawed talc. The unit value for all talc imports was \$259 per ton in 2004 compared with \$225 per ton in 2003.

Prices for talc ranged from \$92 to \$440 per ton (table 4). Prices for pyrophyllite from the Republic of Korea, free on board port, were \$59 to \$65 per ton for fiber glass and refractory manufacturing, \$27 to \$44 per ton for ceramic grade, and \$110 to \$115 per ton for filler grade. The price for filler grades from Australia was \$342 per ton (Industrial Minerals, 2004c). Quoted prices should be used only as a guideline because actual prices depend on the terms of the contract between seller and buyer.

Prices for talc used in some applications increased in 2004. Luzenac America announced that increased costs of production at its Houston mill and the increased cost of importing Chinese talc were contributing factors in the decision to increase the price of talc for personal care products (Industrial Minerals, 2004b). Zemex Industrial Minerals Inc. announced that it would increase prices on its talc products because of increased energy, labor, and raw materials costs (Industrial Minerals, 2004d).

Foreign Trade

Talc exports increased in tonnage to 202,000 t valued at \$39.6 million in 2004. Canada, with 102,000 t, was the leading importer of talc from the United States; followed by Mexico, 16,700 t; China, 10,300 t; Belgium, 9,380 t; and Japan, 6,950 t (table 5). Much of

¹References that include a section mark (§) are found in the Internet References Cited section.

the talc exported to Mexico was shipped to U.S. affiliates operating across the Mexican border and was not reported by the U.S. Census Bureau. Total talc exported to Mexico in 2004, including shipments to U.S. affiliates, exceeded 50,000 t.

Talc imports reported by the U.S. Census Bureau decreased in tonnage to 226,000 t valued at \$58.4 million in 2004. China was the leading source for imported talc (123,000 t), followed by Canada (84,200 t) (table 6).

About 203,000 t of the talc imported into the United States was crude or milled. A little more than 106,000 t entered the United States through the customs district of New Orleans, LA. Nearly all was imported from China. The next leading customs district was Detroit, MI, with imports of 45,100 t (nearly all from Canada). These two port districts accounted for 67% of the tonnage of U.S. talc imports in 2004.

World Review

World production of talc and pyrophyllite was estimated to be 8.32 mt in 2004, unchanged from that of 2003. China was the world's leading producer of talc, followed by the United States, India, Brazil (crude), and France (crude). The Republic of Korea was the leading producer of pyrophyllite, followed by Japan and Brazil. Brazil, China, France, India, Japan, the Republic of Korea, and the United States produced 84% of the world's talc and pyrophyllite (table 7).

Japan.—Luzenac Group finalized its acquisition of additional shares in Nihon Mistron Co. Ltd., Suzuka City, Japan. Luzenac increased its share of Nihon to 60% from 20%, thereby giving it management control of the talc processing operation. Luzenac jointly owns the Nihon plant with Toyota Tsusho Corp. and Sobue Group. The plant processes 30,000 to 40,000 metric tons per year (t/yr) of talc each year from Luzenac's Three Springs mine in Australia. The processed talc is sold to the paint, paper, and polymer industries. Japan is Luzenac's largest Asian market (Industrial Minerals, 2004b; Mining Engineering, 2004).

Major markets for talc in Japan are paper and plastics. These markets use more than 80% of the 500,000 t/yr of talc used in Japan. Most of the talc is supplied through imports, as domestic production is 50,000 t/yr. The polymer industry offers the greatest potential for growth in Japan as automobile manufacturers plan to increase the use of plastic components. Markets for talc in paper have declined in recent years in Japan. This decline paralleled the decrease in paper production associated with a downturn in the Japanese economy in the mid 1990s. Talc imports from China for paper applications declined to less than 450,000 t in 2003 from 600,000 t in 1995 (Industrial Minerals, 2004a).

Outlook

Based on current trends, U.S. mining and sales of talc are expected to remain relatively steady for the next few years. Talc imports increased dramatically between 1985 and 2000 but have leveled off in the past few years. China was the major source for the increasing talc imports in the 1990s. However, the repeal of an 8% tax rebate on talc exports by the Chinese Government and increased freight rates for Chinese vessels probably will have a moderating effect on these imports (Industrial Minerals, 2004b). With the continuing construction boom for residential and commercial buildings, sales of talc for such construction-related applications as adhesives, ceramics, joint compounds, paint, and roofing applications will probably remain steady. The quantity of talc used in plastics will probably increase as the volume of plastics used in consumer products increases. If the value of the U.S. dollar continues to decline relative to other currencies, export markets may improve slightly. No major changes are anticipated in the pyrophyllite markets in the near future.

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TABLE 1
SALIENT TALC AND PYROPHYLLITE STATISTICS¹

(Thousand metric tons and thousand dollars)

	2000	2001	2002	2003	2004
United States:					
Mine production, crude:					
Quantity:					
Talc	851	863	828	840 ^r	857
Pyrophyllite	W	W	W	W	W
Value:					
Talc	22,300	19,500	22,200	22,700 ^r	23,300
Pyrophyllite	W	W	W	W	W
Sold by producers, crude and processed:					
Quantity:					
Talc	821	784	764 ^r	845 ^r	838
Pyrophyllite	W	W	W	W	W
Value:					
Talc	96,100	84,800	75,000 ^r	75,200 ^r	74,000
Pyrophyllite	W	W	W	W	W
Exports, talc: ²					
Quantity	154	137	166	192	202
Value	32,800	28,800	35,700	39,100	39,600
Imports for consumption:					
Quantity	270	180	232	237	226
Value	42,500	35,800	52,700	53,500	58,400
Apparent consumption ³	967	906	894	885 ^r	881
World, production	8,730 ^r	9,060 ^r	7,810 ^r	8,320 ^r	8,320 ^c

^cEstimated. ^rRevised. W Withheld to avoid disclosing company proprietary data.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Excludes powders—talcum (in package), face, and compact.

³Production plus imports minus exports plus adjustments in Government and industry stock. Does not include pyrophyllite.

TABLE 2

CRUDE TALC PRODUCED IN THE UNITED STATES, BY STATE¹

(Thousand metric tons and thousand dollars)

State	2003 [†]		2004	
	Quantity	Value	Quantity	Value
Texas	W	W	W	W
Other ²	840	22,700	857	23,300
Total	840	22,700	857	23,300

[†]Revised. W Withheld to avoid disclosing company proprietary data.¹Data are rounded to no more than three significant digits; may not add to totals shown.²Includes Montana, New York, Oregon, Texas, and Vermont.

TABLE 3
END USES FOR GROUND TALC¹

(Thousand metric tons)

	2003	2004
Ceramics	219 ^r	223
Cosmetics	17	5
Insecticides	--	--
Paint	137 ^r	131
Paper	115	110
Plastics	31	30
Refractories	--	--
Roofing	41	40
Rubber	18	21
Other ²	139 ^r	129
Total	718 ^r	688

^rRevised. -- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes art sculpture, asphalt filler, auto body filler, construction caulks, flooring, joint compounds, and other uses not specified.

TABLE 4
PRICES OF TALC

(Dollars per metric ton)

	Price
New York:	
Paint:	
200 mesh	126
400 mesh	210
Ceramic:	
200 mesh	92
325 mesh	115
Indian, cosmetic-grade	190-195
Chinese, normal (ex-store):	
UK 200 mesh	391-438
UK 350 mesh	403-440

Source: Industrial Minerals, December 2004.

TABLE 5
U.S. EXPORTS OF TALC^{1, 2}

(Thousand metric tons and thousand dollars)

Country	2003		2004	
	Quantity	Value ³	Quantity	Value ³
Belgium	10	2,840	9	1,930
Canada ⁴	72	14,400	102	14,000
Germany	7	1,310	4	1,120
Japan	5	1,260	7	1,510
Mexico	24	2,720	17	2,750
Singapore	4	1,220	5	1,460
Other ⁵	70	15,400	58	16,800
Total	192	39,100	202	39,600

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Excludes powders—talcum (in package), face, and compact.

³Free alongside ship.

⁴Probably includes shipments in transit through Canadian ports.

⁵Includes 62 countries in 2003 and 60 countries in 2004.

Source: U.S. Census Bureau.

TABLE 6
U.S. IMPORTS FOR CONSUMPTION OF TALC, BY COUNTRY¹

Country	Not crushed or powdered		Crushed or powdered		Cut and sawed		Total unmanufactured	
	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)	Quantity (metric tons)	Value (thousands)
2003:								
Brazil	3	\$5	130	\$27	268	\$235	401	\$267
Canada	5	14	66,900	17,500	13,400	10,300	80,400	27,800
China	100,000	13,400	11,900	1,750	1,900	1,780	114,000	16,900
France	--	--	894	1,820	3,020	3,290	3,920	5,110
Japan	--	--	3,550	864	35	41	3,590	905
Other ²	36	57	34,300	1,440	521	1,020	34,900	2,520
Total	100,000	13,400	118,000	23,400	19,200	16,700	237,000	53,500
2004:								
Brazil	28	11	68	14	755	764	847	789
Canada	8	7	66,700	18,400	17,500	13,600	84,200	32,000
China	119,000	15,500	1,440	447	2,030	1,900	123,000	17,900
France	--	--	1,120	1,100	1,460	1,650	2,580	2,750
Japan	--	--	5,670	830	55	89	5,730	919
Other ²	6,070	528	2,400	1,990	687	1,610	9,160	4,130
Total	126,000	16,000	77,400	22,700	22,500	19,700	226,000	58,400

-- Zero.

¹Data are rounded to no more than three significant digits; may not add to totals shown.

²Includes 22 countries in 2003 and 21 countries in 2004.

Source: U.S. Census Bureau.

TABLE 7
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT^{1,2}

(Metric tons)					
Country ³	2000	2001	2002	2003	2004 ^e
Argentina:					
Pyrophyllite	3,877	2,155 ^r	1,770 ^r	1,894 ^r	1,900
Steatite ^e	300	300	300	300	300
Talc	6,730	1,665 ^r	1,643 ^r	1,759 ^r	1,800
Australia: ⁴					
Pyrophyllite	1,727	1,500 ^e	868	1,000 ^e	1,000
Talc	178,545	173,446	173,741	174,000 ^e	173,000
Austria, soapstone and talc, crude ^e	130,000 ⁵	140,000	135,000	135,000	135,000
Bhutan, talc ^e	3,700	3,800	3,900	3,900	3,900
Brazil:					
Pyrophyllite, crude	150,000	189,500	200,000	200,000 ^e	200,000
Talc:					
Crude	300,000	397,000 ^r	348,000 ^r	365,000 ^r	370,000
Marketable product ⁶	7,049	6,300	5,617	5,593 ^r	5,600
Canada, pyrophyllite, soapstone, talc	86,000	90,000	90,000 ^e	90,000 ^e	90,000
Chile, talc	2,421	4,177	3,537	4,374 ^r	4,400
China, unspecified ^e	3,500,000	3,500,000	2,500,000 ^r	3,000,000 ^r	3,000,000
Colombia, pyrophyllite, soapstone, talc ^e	15,000	15,000	15,000	15,000	15,000
Egypt, pyrophyllite, soapstone, steatite, talc ^e	40,000	40,000	40,000	40,000	40,000
France, talc, crude ^e	350,000	350,000	350,000	350,000	350,000
Germany, steatite and talc, marketable ^e	8,000	10,000	10,000	10,000	10,000
Hungary, talc ^e	500	500	500	500	500
India: ^e					
Pyrophyllite	85,000	86,000	85,000	86,000 ^r	86,000
Steatite	545,000 ^r	546,000 ^r	550,000 ^r	552,000 ^r	550,000
Iran, talc ^{e,7}	25,000	25,000	25,000	25,000	30,000
Italy, steatite and talc ^e	140,000	140,000	140,000	140,000	140,000
Japan:					
Pyrophyllite	692,998	623,097	600,000 ^e	600,000 ^e	550,000
Talc	50,000	45,000	40,000	40,000 ^e	35,000
Korea, North, unspecified ^e	120,000	120,000	110,000	110,000	110,000
Korea, Republic of:					
Pyrophyllite	917,973	1,101,825	889,961	912,285 ^r	910,000
Talc	11,344	47,712	37,863	47,911 ^r	48,000
Macedonia, talc	562 ^r	557 ^r	550 ^r	550 ^r	600
Mexico, talc	20,569	77,650	111,621 ^r	114,870 ^r	115,000
Morocco	12,522	27,246	39,612	1,959 ^r	2,000
Nepal, talc ⁸	5,852	3,923	2,621	2,500 ^e	2,400
Norway, soapstone, steatite, talc ^e	27,000	27,000	28,000	28,000	28,000
Pakistan, pyrophyllite	54,365	55,000 ^e	57,500	55,000 ^e	55,000
Paraguay, pyrophyllite, soapstone, talc ^e	200	200	200	200	200
Peru:					
Pyrophyllite ^e	8,000	8,000	8,000	12,296 ^{r,4}	12,300
Talc	9,668	11,165	10,685	10,791 ^r	10,000
Portugal, talc ^e	8,200	8,200	8,200	8,200	8,000
Romania, talc	7,850	7,270	7,292	10,082 ^r	10,000
Russia, talc ^e	100,000	100,000	100,000	100,000	100,000
Slovakia, talc	1,800	2,600	2,290	1,000 ^r	1,500
South Africa:					
Pyrophyllite	11,989	14,386	15,587	13,968	28,481 ⁵
Talc	5,600	3,218	2,511	4,472	12,065 ⁵
Spain, steatite and talc ^e	100,000	100,000	100,000	100,000	100,000
Sweden, soapstone and talc	20,000 ^e	15,000	15,000	15,000	14,000

See footnotes at end of table.

TABLE 7—Continued
TALC AND PYROPHYLLITE: WORLD PRODUCTION, BY COUNTRY AND PRODUCT^{1,2}

(Metric tons)

Country ³	2000	2001	2002	2003	2004 ^e
Taiwan, talc	--	130	27	466 ^r	411 ⁵
Thailand:					
Pyrophyllite	46,011	59,602	103,496	73,556 ^r	74,000
Talc	7,390	6,838	1,702	8,501 ^r	8,500
Turkey	54,278	883	98	-- ^e	--
Uganda, soapstone	--	--	500 ^e	1,000	9,000
United Kingdom, pyrophyllite, soapstone, talc ^e	5,000	5,000	5,000	5,000	5,000
United States:					
Pyrophyllite	W	W	W	W	W
Talc	851,000	863,000	828,000	840,000 ^r	857,000 ⁵
Uruguay, pyrophyllite, soapstone, talc	2,903	1,694	1,700 ^e	1,700 ^{r, e}	1,700
Zimbabwe, talc	989	1,273	911	196 ^r	-- ⁵
Grand total	8,730,000 ^r	9,060,000 ^r	7,810,000 ^r	8,320,000 ^r	8,320,000
Of which:					
Pyrophyllite	1,970,000	2,140,000	1,960,000	1,960,000 ^r	1,920,000
Steatite	545,000 ^r	546,000 ^r	550,000 ^r	552,000 ^r	550,000
Talc	1,950,000 ^r	2,140,000 ^r	2,070,000 ^r	2,120,000 ^r	2,150,000
Unspecified	4,260,000	4,230,000	3,230,000 ^r	3,690,000 ^r	3,700,000

^eEstimated. ^rRevised. W Withheld to avoid disclosing company proprietary data; not included in "Total." -- Zero.

¹World totals, U.S. data, and estimated data are rounded to no more than three significant digits; may not add to totals shown.

²Table includes data available through April 19, 2005.

³In addition to the countries listed, Nigeria may produce talc, but information is inadequate to estimate output.

⁴Data based on Australian fiscal year ending June 30 of year stated.

⁵Reported figure.

⁶Direct sales and/or beneficiated (marketable product).

⁷Data based on Iranian fiscal year beginning March 21 of year stated.

⁸Data based on Nepalese fiscal year beginning mid-July of year stated.